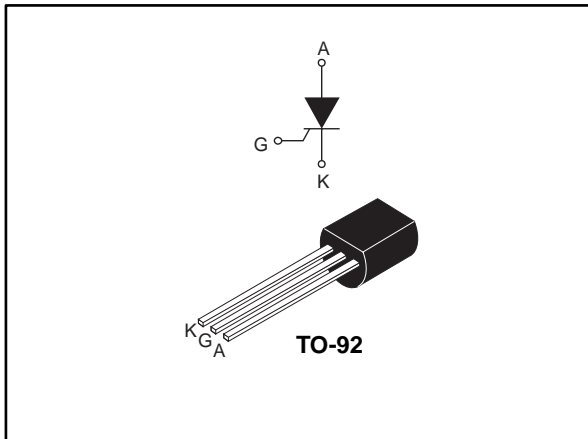


0.8 A asymmetric sensitive gate SCR

Datasheet - production data



Description

Thanks to highly sensitive triggering levels, the XL0840 is suitable for all applications where the available gate current is limited, such as Christmas lights control.

Table 1: Device summary

Symbol	Value	Unit
$I_{T(RMS)}$	0.8	A
V_{DRM}	400	V
I_{GT}	200	μA

Features

- High immunity: 75 V/ μs at 125 °C
- Sensitive gate: 200 μA at 25 °C
- Low leakage current: I_{DRM} max. 100 μA at 125 °C
- ECOPACK®2 ROHS - No exemption

Application

- Christmas lights control

1 Characteristics

Table 2: Absolute ratings (limiting values), limiting values

Symbol	Parameter		Value	Unit	
$I_{T(RMS)}$	RMS on-state current (180 ° conduction angle)		0.8	A	
$I_{T(AV)}$	Average on-state current (180 ° conduction angle)				
I_{TSM}	Non repetitive surge peak on-state current	$t_p = 8.3 \text{ ms}$	8	A	
		$t_p = 10 \text{ ms}$			7
I^2t	I^2t value for fusing				
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100 \text{ ns}$	$f = 60 \text{ Hz}$	$T_j = 125 \text{ °C}$	30	A/ μs
I_{GM}	Peak forward gate current	$t_p = 20 \text{ }\mu\text{s}$	$T_j = 125 \text{ °C}$	1	A
V_{DRM}	Repetitive peak off-state voltage		Max.	400	V
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125 \text{ °C}$	0.1	W
T_{stg}	Storage junction temperature range			-40 to +150	°C
T_j	Operating junction temperature range			-40 to +125	

Table 3: Electrical characteristics ($T_j = 25 \text{ °C}$ unless otherwise specified)

Symbol	Test conditions		Value	Unit	
I_{GT}	$V_D = 12 \text{ V}$, $R_L = 140 \text{ }\Omega$		Max.	200	μA
V_{GT}			Max.	0.8	V
V_{GD}	$V_D = V_{DRM}$, $R_L = 3.3 \text{ k}\Omega$, $R_{GK} = 1 \text{ k}\Omega$	$T_j = 125 \text{ °C}$	Min.	0.1	V
V_{RG}	$I_{RG} = 10 \text{ }\mu\text{A}$		Min.	8	V
I_H	$I_T = 50 \text{ mA}$, $R_{GK} = 1 \text{ k}\Omega$		Max.	5	mA
I_L	$I_G = 1 \text{ mA}$, $R_{GK} = 1 \text{ k}\Omega$	$T_j = 125 \text{ °C}$	Max.	6	mA
$dV/dt^{(1)}$	$V_D = 67 \text{ \% } V_{DRM}$, $R_{GK} = 1 \text{ k}\Omega$	$T_j = 125 \text{ °C}$	Min.	75	V/ μs
V_{TM}	$I_{TM} = 1.6 \text{ A}$, $t_p = 380 \text{ }\mu\text{s}$	$T_j = 25 \text{ °C}$	Max.	1.95	V
V_{to}	Threshold voltage	$T_j = 125 \text{ °C}$	Max.	1.0	V
R_d	Dynamic resistance	$T_j = 125 \text{ °C}$	Max.	600	m Ω
I_{DRM}	V_{DRM} $R_{GK} = 1 \text{ k}\Omega$	$T_j = 25 \text{ °C}$	Max.	1	μA
		$T_j = 125 \text{ °C}$	Max.	100	

Notes:

⁽¹⁾for both polarities of A2 referenced to A1.

Table 4: Thermal parameters

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient (DC)	150	°C/W
$R_{th(j-l)}$	Junction to lead (DC)	80	

1.1 Characteristics (curves)

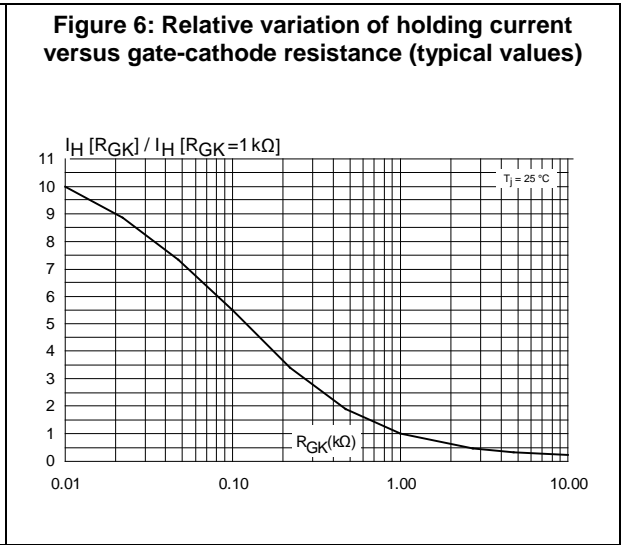
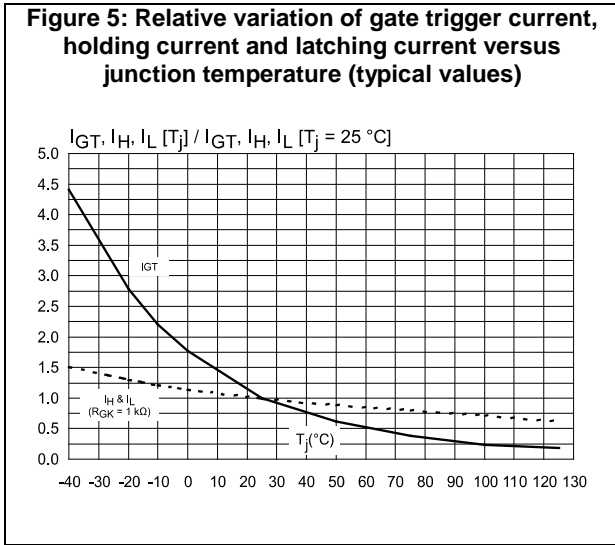
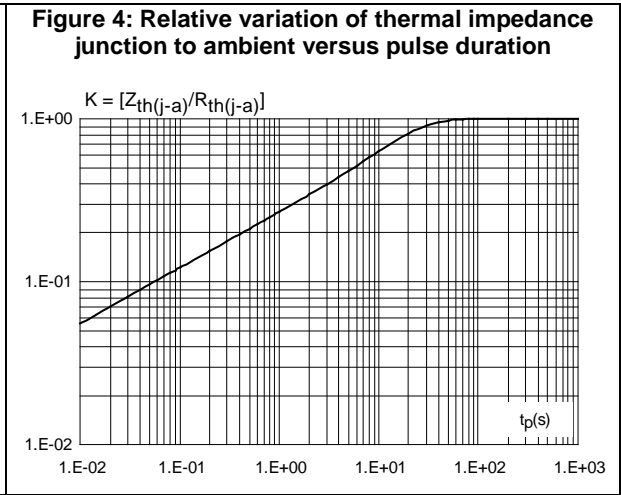
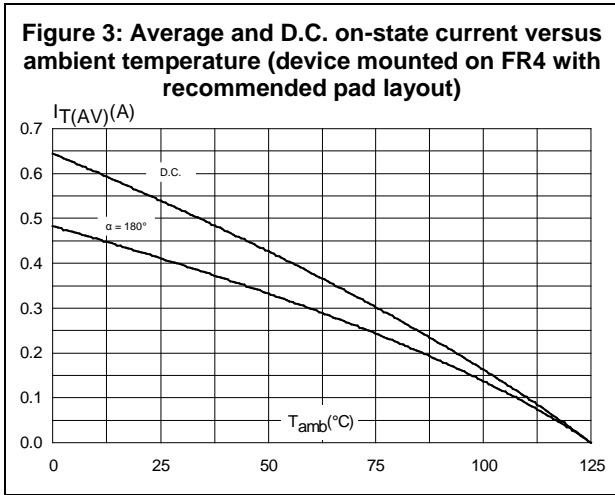
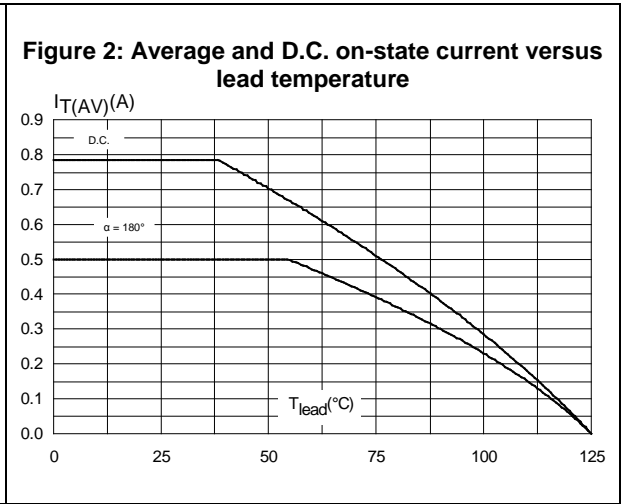
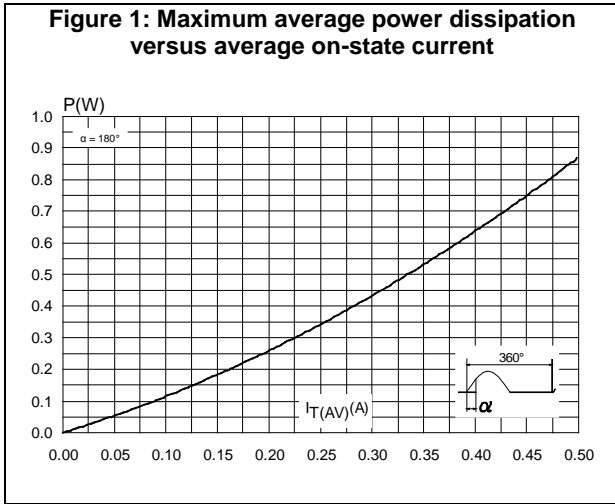


Figure 7: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values)

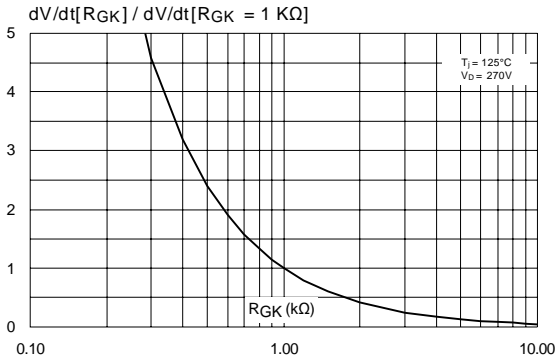


Figure 8: Relative variation of dV/dt immunity versus gate-cathode capacitance (typical values)

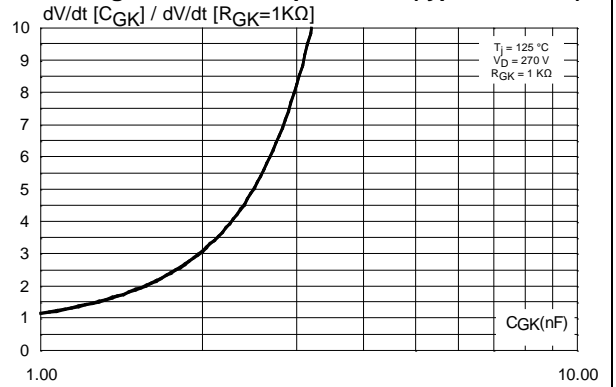


Figure 9: Surge peak on-state current versus number of cycles

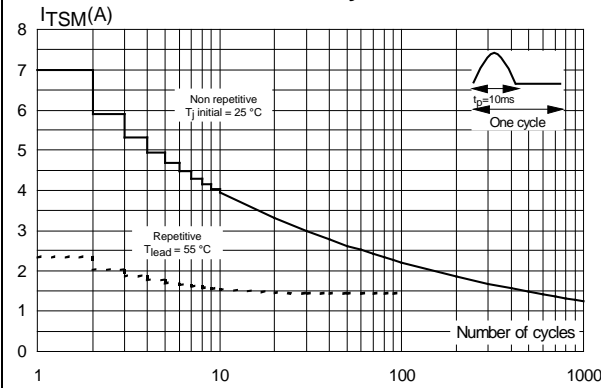


Figure 10: Non repetitive surge peak on-state current for a sinusoidal pulse with width t_p < 10ms

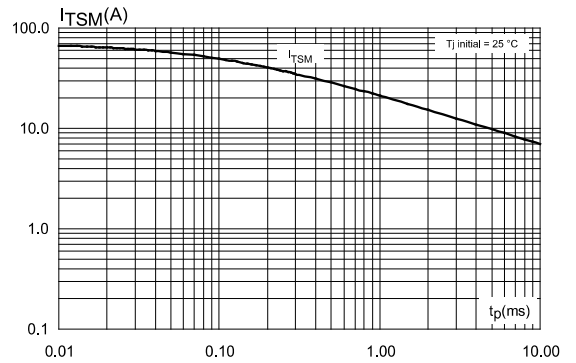
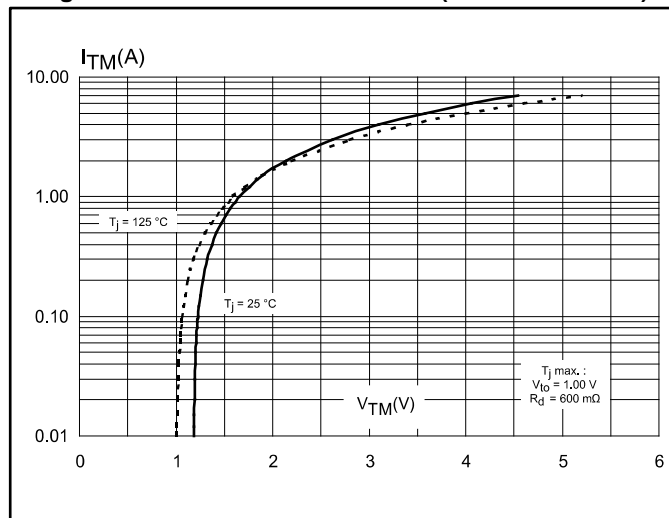


Figure 11: On-state characteristics (maximum values)



2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

2.1 TO-92 package information (for bag version)

Figure 12: TO-92 package outline (for bag version)

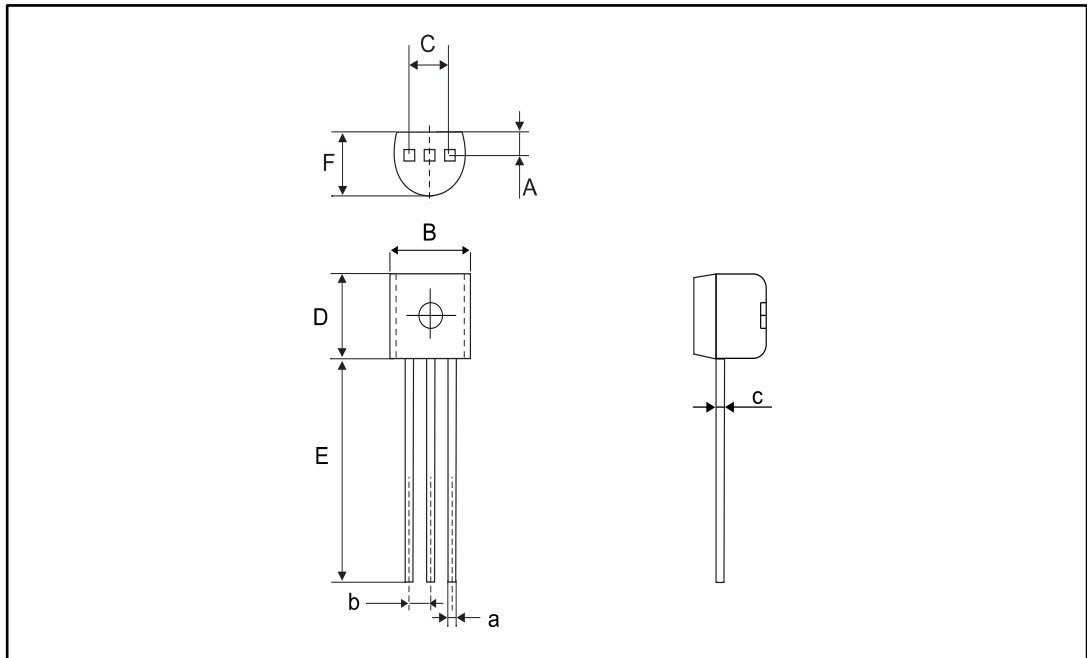


Table 5: TO-92 package mechanical data (for bag version)

Ref.	Dimensions					
	Millimeters			Inches ⁽¹⁾		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		1.35			0.0531	
B			4.70			0.1850
C		2.54			0.1000	
D	4.40			0.1732		
E	12.70			0.5000		
F			3.70			0.1457
a			0.50			0.0197
b		1.27			0.0500	
c			0.48			0.0189

Notes:

⁽¹⁾Inches given for reference only

2.2 TO-92 package information (for ammpack and tape and reel versions)

Figure 13: TO-92 package outline (for ammpack and tape and reel versions)

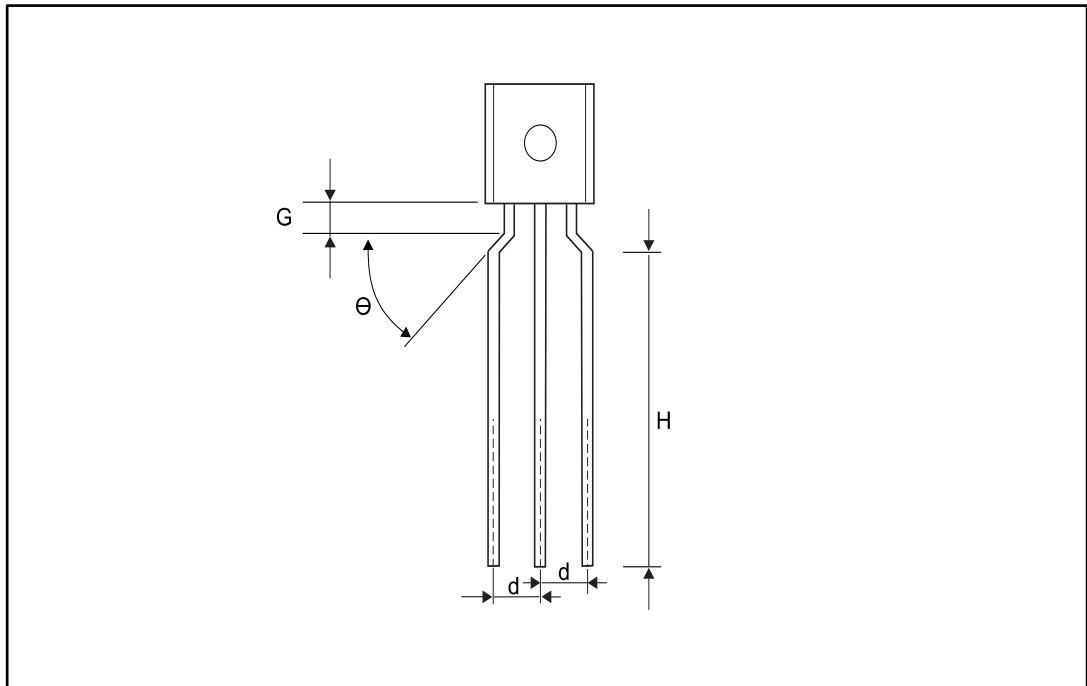


Table 6: TO-92 package mechanical data (for ammpack and tape and reel versions)

Ref.	Dimensions					
	Millimeters			Inches ⁽¹⁾		
	Min.	Typ.	Max.	Min.	Typ.	Max.
G	1.30	1.70	2.00	0.0511	0.0669	0.0787
H	7.69		9.69	0.3028		0.3815
d	2.40		2.90	0.0945		0.1142
θ	30°	40°	50°	30°	40°	50°

Notes:

⁽¹⁾Inches given for reference only

3 Ordering information

Figure 14: Ordering information scheme

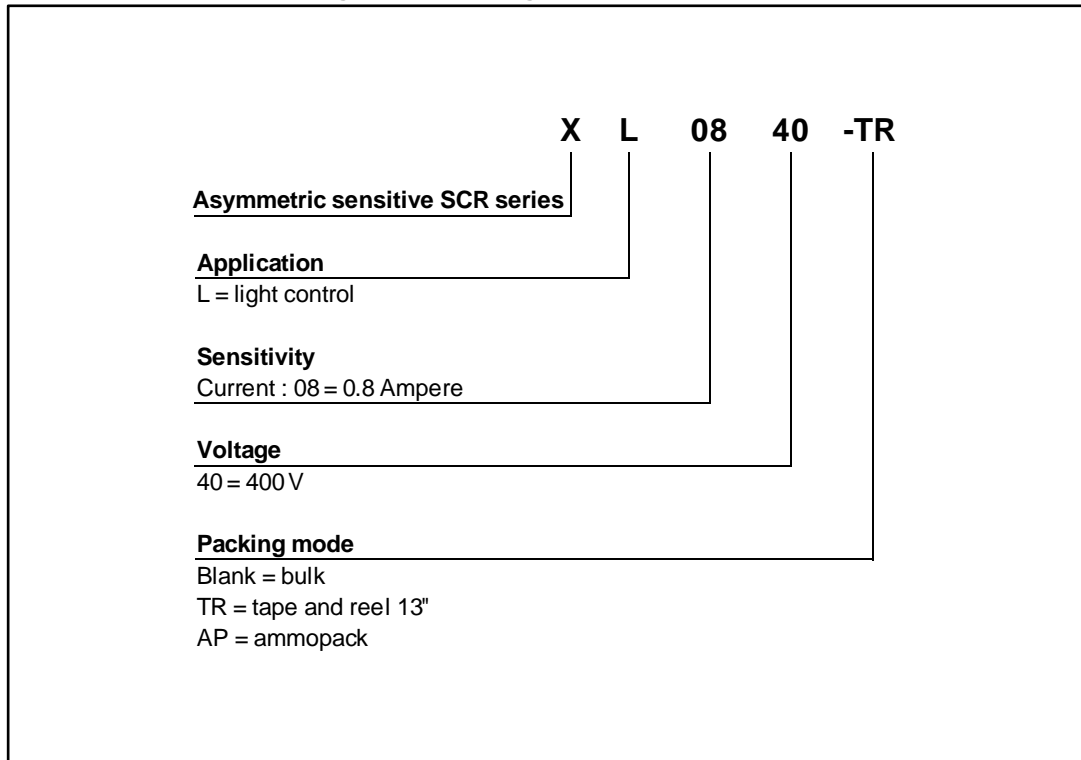


Table 7: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
XL0840	XL0840	TO-92	0.2 g	2500	Bag
XL0840-AP	XL0840			2000	Ampmpack not in dry bag
XL0840-TR	XL0840			2000	Tape and Reel 13 inches

4 Revision history

Table 8: Document revision history

Date	Revision	Changes
Jan-2002	1	Initial release
07-Sep-2017	2	Updated package information section.

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2017 STMicroelectronics – All rights reserved